REMARKS

Claims 1-6, all the claims pending in the application, stand rejected. Claim 1 is amended. Claim 6 is cancelled. In particular, claim 1 is amended to specify the etching of a principal surface using a chemical treatment to remove at least a part of the polishing-affected layer, and to specify a minimum glass disk ratio of surface roughness in a radial and circumferential direction, as taught at pages 17 and 19 and in Table 1.

Claim Rejections – 35 U.S.C. § 103

Claims 1, 3, and 4 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Saito (US 2003/0110803 A1).

Saito

The Examiner asserts that Saito teaches the formation of texture on the polished surface of a glass disk using a texturizing tape, with reference to Figure 2 and paragraph [0016]. The Examiner also asserts that the substrate is subjected to several required and/or optional processing steps, including a chemical strengthening step in a molten Na/K salt bath, a texturing step with texture tape with optional alkali component-¶ [0077-0083], a tape wash with alkali washing solution - ¶ [0088-0090], a scrub wash with alkali solution ¶ [0091-0094], and an ultrasonic wash with alkali solution - ¶ [0095-0098]. The Examiner asserts that the scrub wash, chemical strengthening, and optional scrub wash steps comprise three separate procedures between a substrate polishing (e.g. mirror-polishing) step and a texturing step, where each of the three steps is performed with the use of "chemicals" and is a "chemical treatment step for the mirror-polished glass substrate".

With respect to the scrub wash step, the Examiner observes that strongly basic solutions particularly comprising sodium hydroxide result in the dissolution of silica to form sodium silicate or "water glass" and notes that Saito uses strongly basic washes (e.g. pH 10) in the exemplary processes set forth in Table 3. The Examiner also notes that Saito teaches that it is known to add sodium or potassium hydroxide to "add a chemical action to the mechanical processing force" but admits that Saito does not teach that the scrub wash steps using an alkaline solution remove "at least a part of the polishing-affected layer as claimed".

Applicant respectfully submits that the technical terms used in the present application and claims to define the invention, and the well known meaning of those terms as further specified by language of the claim, preclude a consideration of a washing step from being an etching step.

Amended Claim 1

According to the present invention as defined in amended claim 1, etching is performed on the principal surface of the mirror-polished glass substrate by using a chemical treatment to remove at least a part of a polishing-affected layer which is formed on the principal surface of the glass substrate in the mirror-polishing step. This statement of the "etching" step clearly relates to the calculated removal of a specific layer of the glass substrate.

No Etching as Claimed

As the Examiner notes, Saito discloses a "scrub wash step using an alkaline solution". However, "the scrub wash step using an alkaline solution" of Saito is different from an "etching by using a chemical treatment" because a "wash" is clearly different from "etching." The term "etching" is well known in the art as a process to chemically remove layers from a surface during manufacturing. and is understood by those skilled in the art to be different from simple "washing" with pure water or even with liquids having alkaline or acidic properties. Even the removal of ions on the surface of the substrate in Saito would not be an "etching" as claimed. Accordingly, in Saito, the polishing-affected layer can not be removed in the manner claimed by "the scrub wash step using an alkaline solution."

Similarly, neither of the tape wash or ultrasonic wash steps can be the claimed "etching" step.

No Surface Roughness Ratio as Claimed

According to the present invention as now defined by amended claim 1, the glass disk has a ratio Ra(r)/Ra(c), where Ra(r) is a surface roughness in a radial direction and Ra(c) is a surface roughness in a circumferential direction. that is equal to 3 or more. The Examiner appears to

agree that this ratio is not taught in Saito and is not inherent. Thus, the claim cannot be anticipated.

On the basis of express limitations in amended claim 1, the present invention is different from Saito, and therefore is not anticipated by Saito.

Claims 3 and 4

With regard to the dependent claims, the Examiner asserts that the chemical strengthening in claim 3 is known and further asserts that the glass substrate has a preferred composition ([0056-0066]) that reads directly upon the claimed composition as set forth in claim 4.

These claims would be patentable at least on the basis of their dependency from claim 1.

Claim Rejections – 35 U.S.C. § 103

Claims 1, 3, and 4 are rejected under 35 U.S.C. 103(a) as obvious over Saito (US 2003/0110803 A1). This rejection is traversed for at least the following reasons.

The Examiners anticipates that Applicants would have a reasonable argument against anticipation of the claimed invention by Saito, and thus asserts that the use of an alkaline solution comprising sodium hydroxide would present no more than a merely obvious extension over the prior art teachings in Saito. Specifically, the Examiner finds it obvious to utilize a solution which provides a "chemical action" which compliments the scrubbing force in order to insure complete removal of the polishing abrasives and chemical strengthening reagents.

First, the Examiner is creating additional process steps without considering the effect on the overall production of a glass substrate having the characteristics as claimed. There is no basis in the Saito disclosure for utilizing a solution which uses "etching" to provide a "chemical action" which compliments a scrubbing force. Second, there is no reason to consider such solution to provide an "etching" as now claimed. Finally, the Examiner's assumption does not consider the new limitations of the claimed invention.

Specifically, Saito does not provide any basis for teaching the ratio newly recited in the claim, as Saito has no recognition of the desirability of such ratio or its relationship to

performance of the glass substrate. Further Applicants respectfully submit that this feature is not a matter of routine optimization because only the specifically claimed value (3 or more) can achieve the technical effect disclosed at page 19, lines 23-28 of the original specification. The prior art did not acknowledge or understand the need for this effect.

Accordingly, the invention of claim 1 would not be obvious over Saito, and the present invention is clearly patentable over Saito.

Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito (US 2003/0110803 A1) as applied to claim 1 under 35 USC 102(b) above. This rejection is traversed for at least the following reasons.

These claims would be patentable at least on the basis of their dependency from claim 1.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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